



Alberta Government/Industry
Acid Deposition Research Program

Second Annual Report

April 1, 1984 to March 31, 1985



Table of Contents

Background	1
Co-Chairmen's Report	2
Objectives/Memberships/ Organization	6
Special Report – Biophysical Research	8
Special Report – Human Health, Medical Diagnostic Review	10
Special Report – Public Advisory Board	11
Financial Statement	12



Now in its third year, the Acid Deposition Research Program is an \$8-million undertaking by the Province, the petroleum industry and Alberta's electrical utilities to assess the environmental impact of acid-forming gases in Alberta. The ADRP has commissioned specific scientific studies and research is now progressing.

Despite the fact that Alberta's industrial emissions and regulations are among the world's most stringent, public concern persists about the possible impact of emissions on air, water, land and human systems. The ADRP has as its goals to determine and clarify justification for public concern and to identify solutions. Research is focussing on two principal gas groups: oxides of sulphur (SO_x) and oxides of nitrogen (NO_x). In addition, in the area of human health, research will include addressing the concerns of residents in the downwind corridors of major emission sources.

A distinctive feature of the ADRP is the unique integration of studies in the biophysical and human areas. Since the program's inception, there

has been an acknowledgement by all of those involved that a co-ordinated, interdisciplinary, holistic research plan is needed. The basic assumption behind this approach is that all components of ecosystems are interrelated. Thus, it is only by understanding chemical and biological processes within, between, and among ecosystems that researchers can hope to fully assess the impacts of acid deposition.

The program will publish interim reports to the public as research progresses. A major report outlining the program's findings, conclusions and recommendations will be released at the conclusion of the project.



Co-Chairmen's Report

In the 1984-85 fiscal year, the Acid Deposition Research Program (ADRP) made further progress in establishing and putting into effect long-term research plans which will determine the environmental effects of acid-forming gases on Alberta's environment.

Specifically, in this fiscal year the ADRP:

- received special funding from the Department of Alberta Social Services and Community Health with the mandate to undertake a special medical diagnostic review into the effects of sour gas emissions in four southern Alberta communities;
- more fully defined additional human health research areas and developed a planned approach to this research;
- further refined biophysical research plans and goals, and selected a prime research contractor for the biophysical research;
- established staff support to ensure effective day-to-day program management; and
- held a communications workshop to define communications objectives and, subsequently, established a Public Advisory Board (PAB) to facilitate public input into the program.

Human Health Program: Medical Diagnostic Review Proceeds

In the area of human health, the Medical Diagnostic Review (MDR) in the Twin Butte/Pincher Creek area began last summer after being identified as a priority by the scientists who took part in the human health workshop in Banff (January 1984). The decision was made by the Alberta Government to begin work immediately on this project because of the long-standing concerns of residents in the area, as well as the inconclusive nature of research findings to date. The money for this project is being provided by Alberta Social Services and Community Health; the Department's Minister, Dr. Neil Webber, committed \$250,000 for the work, and stated that more would be available if necessary. On May 1, 1985 the Minister announced details: McGill University in Montreal, headed by Principal Investigator Dr. Walter O. Spitzer, would undertake the MDR project providing residents with a "blue-ribbon" study. Total cost would be more than \$1 million. Because of the importance of the announcement a special report on the MDR project follows.

In addition to the MDR an occupational epidemiology research project is being considered. This project, which will focus more specifically on the occupational workforce of the sour gas industry, is an attempt to determine whether acute or chronic exposure to sour gas or its by-products have significantly affected the health of workers. The outcome of these two projects will determine whether a more comprehensive community epidemiology study is required to prove cause-effect relationships between ill health and acid-forming emissions.



Ken Findlay



Ken Smith

Biophysical Research; Selection of a Prime Research Contractor

Early in 1985, the Members' Committee selected the University of Calgary's Kananaskis Centre for Environmental Research to undertake work to reach the first critical point of the biophysical research plan. Results of this first phase of research will allow the ADRP to decide what additional scientific work will be required to determine whether acid-forming gases are causing a problem in Alberta.

The full value of this first phase contract is \$2.9 million and it will span a period of 32 months. In general, work is included in these areas:

1. Inventory of sulphur oxide and nitrogen oxide emissions in Alberta;
2. Air quality assessments; and
3. An initial assessment of the potential impact on the environment of acid deposition in Alberta.

Communications Program: Public Advisory Board Established

A communications workshop held in the summer of 1984 formalized and defined the ADRP's public communications goals. Late in 1984, the Members' Committee accepted the bulk of the recommendations coming from the workshop and formally amended the ADRP charter by establishing as an objective that the program will "encourage

and include opportunities for public representation'. To reflect the importance placed upon this objective, the Members' Committee established a Public Advisory Board (PAB) in the spring of 1985.

The Board's mandate is to provide a broad spectrum of public input to the Members' Committee, exchange information, and offer advice on public involvement, information and communications. The Board's chairman, who is elected from PAB membership, sits as a non-voting member of the Members' Committee.

Staff Appointments Provide Necessary Infra-Structure

The ADRP hired Dr. Ron Wallace as Program Manager in December, 1984. Dr. Wallace, President of Dominion Ecological Consulting Ltd., Calgary, is a biologist by training and has managed and conducted scientific studies on environmental impact assessments in many parts of Canada and abroad. In his capacity as program manager, he works closely with the Kananaskis Research Centre.

The Members' Committee also appointed a scientific co-ordinator to the biophysical research program early in 1985. A professor of plant pathology with the University of Minnesota, Dr.

Sagar Krupa will oversee the quality of the scientific work, co-ordinate scientific peer reviews, and act as science advisor to the Members' Committee.

Dr. R.E. Rogers was retained to manage the Medical Diagnostic Review Project and also chair the ADRP's Human Health Committee. Formerly manager of Inhalation Toxicology Program at Alberta Workers' Health, Safety and Compensation, Dr. Rogers is now professor of biology at Edmonton's Concordia College. Dr. Rogers will co-ordinate the Human Health Research Program and act as advisor to the Members' Committee.



As a reflection of its communications priorities, ADRP also retained a communications co-ordinator, Jean Flatt, to assist the Members' Committee in establishing channels of two-way communications with the public, and in media relations activities.

With these key appointments, the ADRP put in place the necessary structure, expertise and management skills that will permit rapid progress in the years ahead.

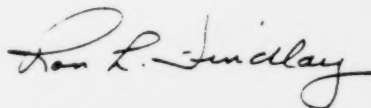
Assuming the Government Co-Chairman's position early in 1985 was Carl Primus, Assistant Deputy Minister, Alberta Environment. Mr. Primus became Assistant Deputy Minister for Environmental Protection Services late in 1984. His position carries the responsibility of ADRP Co-Chairmanship. His leadership will be important to achieving the ADRP's goals in the coming years.

Looking Ahead

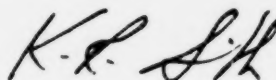
Through the next fiscal year ADRP will be focussing on a more detailed working plan for the entire human health program, and beginning actual field work in the biophysical program.

In closing, we extend our thanks to the Members' Committee for their ongoing dedication to this program: Treasurer, Bill Ross, Esso Resources Canada; Secretary, Dr. Harby Sandhu, Alberta Environment; Dr. Percy Sims, Alberta Environment; Jock Poyen, the Independent Petroleum Association of Canada; Michael Robertson, Petro-Canada; Phil Mason, NOVA, An Alberta Corporation; Dr. John Railton, TransAlta Utilities; Dr. Martha Kostuch, Public Representative; and Ed Brushett, Energy Resources Conservation Board.

The ADRP has also benefitted from the efforts and support of many others: scientists and researchers, whose input and direction have made the program a reality, community associations and groups, the news media and many others who have a sincere and genuine interest in achieving an understanding of the effects and consequences of acid-forming gases in Alberta.



Ron Findlay, Co-Chairman
Manager, Environmental Affairs
Amoco Canada Petroleum Company Ltd.



Ken Smith, Acting Co-Chairman
Assistant Deputy Minister
Alberta Environment

ADRP: Organization

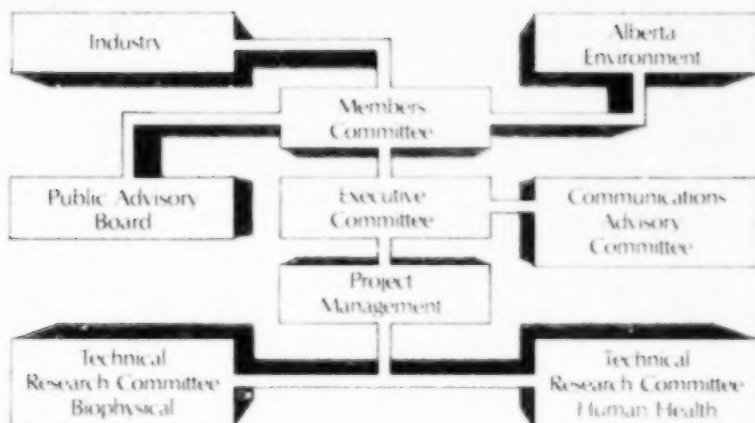
A. Objectives

1. To provide a comprehensive understanding of the effects and consequences of acid-forming gases on the environment.
2. To provide a scientific basis for sound, long-term environmental management and regulatory control with respect to acid-forming gases.
3. To disseminate such information among members, to the public and to government bodies.
4. To undertake any research deemed appropriate.
5. To encourage and include opportunities for public representation in the ADRP.

B. Membership and Percentage Participation

Initial Members	Percentage Participation for Voting and Funding	Number of Voting Representatives
The Minister	50.00	1
Canadian Petroleum Association	34.20	1
Independent Petroleum Association of Canada	5.27	1
Utilities Group	5.27	1
- TransAlta Utilities Corporation		
- Alberta Power Limited		
- The City of Edmonton		
Petro-Canada Exploration, Inc.	2.63	1
Nova, An Alberta Corporation	2.63	1
Energy Resources Conservation Board	—	—
Public Member	—	—
TOTAL	100.00%	6

C. Alberta Government/Industry Acid Deposition Research Program Organization



Members Representatives:

Alberta Dept. of Environment
CPA
IPAC
PetroCan
Nova
Utilities
ERCB
Public

Co-Chairmen

Executive Committee:

Alberta Dept. of Environment
Industry
Secretary
Treasurer

Co-Chairmen

Technical Committees:

Industry
Government

Co-Chairmen

D. Members Committee Representatives 1984-85

R.L. Findlay (Co-Chairman)
Manager, Environmental Affairs
AMOCO Canada Petroleum Co. Ltd.

H.S. Sandhu (Secretary)
Senior Research Manager
Research Management Division
Alberta Environment

M.R. Robertson
Manager, Environmental Affairs
Environmental and Social Affairs
Petro-Canada

K. Smith
(Acting Co-Chairman)
Assistant Deputy Minister
Alberta Environment

J. Poyen
Manager, Economics Director
Independent Petroleum Association of Canada

J. Railton
Manager, Environmental Planning
TransAlta Utilities

W.K. Ross (Treasurer)
Senior Engineer Specialist
Development Division
Esso Resources Canada Ltd.

C.P. Mason
Manager, Environmental Affairs
NOVA

E. Brushett
Manager, Environmental Protection
Energy Resources Conservation Board

H.P. Sims
Director, Research Management Division
Alberta Environment

M. Kostuch
Public Representative

Special Report – Biophysical Research

In January, 1985, the Kananaskis Centre for Environmental Research of the University of Calgary was awarded a \$2.9 million contract to undertake work to reach critical point one of the biophysical research plan. Results of this first phase of research will allow the ADRP to assess what additional scientific work will be required to determine whether acid-forming gases are causing or will cause a problem in Alberta in the years ahead.

A request for proposals went out in the summer of 1984 to more than 10 organizations involved in research-related work in Canada. The selection of the Kananaskis Research Centre brings together experts and resources outstanding in their fields from both the private and university sectors. In fact, it has been identified that one of the significant indirect benefits of the research work will be the transfer of knowledge and technology on the topic of acid deposition between the private and university sectors.

The 32-month research contract involves more than 50 professional and technical people. In addition to the resources of the Kananaskis Centre, the scientific expertise of individuals from these organizations and companies has been retained:

- The University of Calgary Departments of Physics, Biology, and Mathematics and Statistics;
- Ecosat Geobotanical Surveys Inc., Vancouver, British Columbia;
- Campbell Geoscience Ltd., Calgary, Alberta;
- Western Research, a division of Bow Valley Resource Services Ltd., Calgary, Alberta;
- Soils Department, Alberta Research Council;

- Nuclear Environmental Analysis Corp., Beaverton, Oregon;
- Element Analysis Corporation, Tallahassee, Florida; and
- Lawrence Livermore Laboratory, University of California, Livermore, California.

Complementing the research team are internationally-recognized scientists from Canada and the U.S. in advisory roles throughout the research phases.

In general, work will include:

1. an inventory of sulphur oxide and nitrogen oxide emissions in Alberta;
2. air quality assessments, both in a background area and up and down-wind from point source emissions, over a 17-month period;
3. a world literature review in the biological sciences on the effects of acid deposition on vegetation, soils and surface and ground waters, and then placing these within an Alberta context;
4. a first order assessment of the potential impact on the environment of acid deposition in Alberta.

In February, the researchers began with the identification of potential air monitoring sites and point sources, as well as the design and assembly of the air quality monitoring trailers. Field monitoring is scheduled to begin in the summer of 1985 and will extend to the fall of 1986. The literature reviews and the emission inventory have also begun.

The biological researchers will be submitting their first annual report to the ADRP's Members' Committee early in 1986.



Special Report – Human Health, Medical Diagnostic Review

On May 1, 1985, Dr. Neil Webber, Minister of Social Services and Community Health, announced that the ADRP on behalf of the Government of Alberta had awarded the Medical Diagnostic Review to McGill University of Montreal. The project is designed to address the specific health concerns of residents of Twin Butte, Mountain View, Hillspring and Glenwood and to show generally whether these residents experience health problems in greater or lesser measure than do residents of other Alberta communities. The project, at a total cost of more than \$1 million, will require more than 50 medical and support personnel to spend 10 weeks in the area in the summer of 1985.

As Principal Investigator, Dr. Walter O. Spitzer, head of Epidemiology at McGill and of the Montreal General Hospital's Rapid Response Unit, will lead an inter-university and international group of scientists and clinicians. The use of personnel from several organizations is necessary because no one university or research organization has the expertise to tackle such a complex problem within the time frame allocated for the research. The team assembled to do the project is to be known as the McGill-Interuniversity Health Research Group.

Scientific evaluation of the McGill proposal was done by a panel of independent senior investigators from several universities in North America who made their recommendations to the ADRP. This Science Advisory Body approved the strategy of the MDR project and the credentials of the main investigators. In addition, Dr. Spitzer announced that he would form a community advisory group of lay residents and elected officials to counsel him and his colleagues on relevance. The group was formed in May from persons nominated by interest groups in the communities studied and by designates of local authorities.

The multi-phase research program will use a comprehensive health assessment by questionnaire for all residents. This will be followed by full physical examinations of all residents. In-depth and ultra-specialized testing of those residents who still display unexplained health problems will be done. Parallel measurements will be done in two comparison communities in exactly the same manner.

In his comments to local residents when making the announcement, Dr. Webber emphasized that community co-operation and participation are key to the success of the study.

"The residents wanted us to design a study that was both scientifically credible and acceptable to them," he said. "With local support and participation, this project will meet those criteria."

The Medical Diagnostic Review team will arrive in southwestern Alberta in late May and will stay most of the summer. No specific deadline has yet been set for government and the ADRP to receive the report. Research results will be made public.

Special Report – Public Advisory Board

The Public Advisory Board (PAB) was established in the spring of 1985 as a reflection of the ADRP's commitment "to encourage and include opportunities for public representation".

The PAB consists of six members, representing agriculture, health care, environmental groups, municipal districts and counties, a voting member of the ADRP's Members' Committee and a member of the general public yet to be selected.

Early in 1985, ADRP wrote to associations and agencies representing these groups and asked them to nominate a representative. At the PAB's first meeting in April, the group determined the means of advising the public of the need for a public representative, and the subsequent selection process.

The PAB's mandate is to provide a broad spectrum of public input to the Members' Committee, exchange information, and offer advice on public involvement, information and communications. The PAB elected its chairman from its membership. The chairman sits as a non-voting member of the ADRP's Members' Committee.

As of April, 1985, the PAB Members were:

- Herman Bulten, Leduc – agricultural community;
- William Janssen, Woking – municipal districts;
- Nicholas Bayliss, Edson – health associations;
- Dr. Martha Kostuch, Rocky Mountain House – environmental groups; and
- Michael Robertson, Calgary – ADRP Members' Committee.

Protem chairman was Dr. Kostuch, until the selection of the public representative and the first full meeting of the group is held.



Public Advisory Board meeting (left to right): Herman Bulten; Martha Kostuch; Gordon Stehr on behalf of Bill Janssen; and Michael Robertson.

Financial Statement

Acid Deposition Research Program

Statement of Operations and Surplus

For the Twelve Months from April 1, 1984 to March 31, 1985

	1985
Revenue	
Surplus, March 31, 1984	\$ 59,843
Members	1,352,630
Interest	25,794
	<u>1,438,267</u>
Expenditures	
Human Health	90,526
Biophysical	8,086
Communications	39,738
Administration	27,689
	<u>166,039</u>
Excess of revenue over expenditures for the period and surplus at end of period	<u>\$1,272,228</u>

Balance Sheet

March 31, 1985

	1985
Assets	
Current	
Cash and short term deposits	<u>\$1,272,228</u>
Liabilities and Surplus	
Current	
Surplus	<u>\$1,272,228</u>
On behalf of the Members Committee:	
William: X 5822	
Member	

Notes to Financial Statements

March 31, 1985

1. Operations and significant accounting policies

The Acid Deposition Research Program was established on January 1, 1983 to perform studies and conduct various workshops and other activities on behalf of its members who are principally companies and organizations operating in the natural resources and energy sectors. The majority of the Program's revenue is derived from, and expenditures are incurred on behalf of, its members.

The financial statements of the Program have been prepared by management in accordance with accounting principles that are considered appropriate for organizations of this nature. The financial statements have, in management's opinion, been properly prepared within reasonable limits of materiality and within the framework of the accounting policies summarized below.

a) Revenue

The Program accounts for revenues using the accrual method of accounting except that interest earned on surplus cash is recognized on the cash basis.

b) Income tax status

The Program is a non-profit organization and as such is exempt from income tax.

